DOCUMENT RESUME

ED 406 464 UD 031 619

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TITLE Action Research: Finding Solutions To Help Limited English Speakers.
PUB DATE [97]
NOTE 26p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; Achievement Gains; *Action Research; Constructivism (Learning); *Elementary School Students; Grade 5; Hispanic Americans; Intermediate Grades; *Limited English Speaking; *Oral Language; Outcomes of Education; *Skill Development; Teaching Methods
IDENTIFIERS Hispanic American Students; Teacher Researchers

ABSTRACT

An action research project was designed to improve the English oral language skills of students of limited English proficiency (LEP) and their academic achievement. Thirty students were randomly chosen from 70 Hispanic fifth graders who enrolled in a voluntary program. Instruction was given using a contextualized environment. Within this framework, a constructivist pedagogy was used along with the principles of instructional discourse and active teaching techniques. Results of the action research project demonstrate its positive outcomes. After 6 months, all students in the experimental group increased their scores on the standardized test at a much greater rate than students in the norming group. In addition, these students achieved modal grade level proficiency for the first time in 5 years. The study substantiates the importance of teacher-generated action research in improving student achievement. Appendixes contain five charts of student achievement results. (Contains 5 tables and 17 references.) (SLD)

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Action Research: Finding Solutions to Help Limited English Speakers

Executive Summary

This study investigates an action research project designed to improve Limited English Speakers (LEP) English oral language skills as well as their academic achievement. Thirty students were randomly chosen from seventy students who enrolled in the voluntary program. Instruction was given to the fifth grade Hispanic students utilizing a contextualized environment. Within this framework, a constructivist pedagogy along with the principles of instructional discourse and active teaching techniques were used. Results of the action research project demonstrated positive outcomes. After six-months all students in the experimental group increased their scores on the standardized test at a much greater rate than the norming group. In addition, these students achieved modal grade level proficiency for the first time in five years. This study substantiates the importance of teacher generated action research to improve student achievement at their particular site.

Introduction

In June of the 1995 school year an action research project was initiated at Juniper Elementary School in Fontana, California. The programs' genesis and cynosure was to improve and accelerate academic achievement and English oral language proficiency for LEP (Limited English Proficient) Hispanic fifth grade students. Thirty LEP Hispanic students (15 girls and 15 boys ages nine to eleven) were selected randomly from the attendance list of seventy students who had enrolled in the after-school enhancement program. These thirty students became the study group for this research. Each of these students volunteered to participate for six months. The parents of the participants were initially contacted through a letter requesting permission for their children to participate in the study.

The Interventions Focus

It was hypothesized that by using the principles of accelerated language acquisition, constructivists theory, instructional discourse, and active teaching strategies in the one hour after-school enhancement program for six months, LEP Hispanic fifth grade students would show an increase in levels of oral language proficiency (increased oral English comprehension, verbal expression, and syntax articulation) and academic achievement (English reading comprehension, English language expression, and total math scores) as measured by the Idea Oral Language Proficiency Test (IPT) and the Comprehensive Test of Basic Skills (CTBS).

Specific

The specific research questions focused on the amelioration and effectiveness of teaching LEP Hispanic fifth grade students for six months in the after-school enhancement program. The research tested the following four hypotheses:

1. There would be a significant increase in English oral language proficiency after the six-month after-school intervention. ($p < .05$).

2. There would be a significant increase in reading comprehension after the sixth-month after-school intervention ($p < .05$).

3. There would be a significant increase in English language mechanics after the sixth-month after-school intervention ($p < .05$).

4. There would be a significant increase in total math scores after the sixth-month after-school intervention ($p < .05$).

In addition, the analysis of the pre/post test results were utilized to appraise the growth of the students during the intervention with the national norm group. The final use of the scores equated the students' previous results (of the CTBS) over the last four years with their current testing levels. The comparison evaluated the scores to assess significant change regarding previous and present Grade Equivalents (GEs) and National Curve Equivalents (NCEs) after the posttest.

Background and Context

The Fontana Unified School District (FUSD) serves students in kindergarten through the twelfth grade, and is located in San Bernardino County, California. The city is located approximately 50 miles east of Los Angeles and 100 miles north of San Diego and the U.S. border with Mexico. FUSD currently serves students who reside in the city of Fontana, parts of Bloomington, and Rialto. Equally important, this area contains a large proportion of affordable low-income housing units that tend to attract transient families.

Most of the students coming into FUSD are from Mexico. The test scores—IPT and CTBS—clearly suggest that the majority lack basic skills associated with literacy and proficiency in their native language. Likewise, the native language of these students vary from Spanish to dissimilar Indian dialects spoken in the remote areas of Mexico and South America. Nevertheless, Spanish-speaking children constitute the district's largest overall language minority at approximately 97 percent. Spanish-speaking students also represent the highest percentage of LEP students enrolled in all FUSD schools.

Since 1988, approximately one-third of all new district enrollees has been identified as language minority students. Therefore, during the past six years, 800 more students have needed bilingual instruction each year.

Past Performance

Previous academic achievement by these students (Appendices 1-5) showed that in the first grade, the students' average stanine was one, the National Curve Equivalent (NCE) was one, and the Grade Equivalent (GE) was zero. The second grade stanine was two, the NCE average was six and the GE was 1.0. The third grade stanine level was two, the NCE was eight, and the GE was 1.8. For the fourth grade, the stanine level was two, the NCE was three, the GE was 2.4. At the start of the fifth grade, the stanine level was three, the NCE level was 17, and the GE was 3.3. Clearly, an intervention was needed to accelerate second-language acquisition as well as academic achievement. The action research project implemented a voluntary one hour after-school enhancement program for the LEP Hispanic fifth grade students.

The action research construct was to give these students appropriate academic instruction in a contextualized environment that would enhance English language instruction by utilizing a hands-on learning environment. The after-school program implemented research on accelerated language learning, constructivists theory (Dewey, 1916; White, 1959; Piaget and Inhelder, 1969; Goldman and Trueba, 1987; Walker, 1987; Tharp, 1989; Morrow, 1993), instructional discourse (Tharp and Gallimore, 1989; Rogoff, 1990; Goldenburg, 1992), and active teaching strategies (Tikunoff, 1983; Sullivan, 1992; Garcia, 1994). By using these modes of teaching concurrently, it was postulated that after six months, the Hispanic students would show a significant increase in both academic achievement and English oral language skills.

Personnel

The three teachers chosen in the study were identified through a process comparable to that in locating elementary curriculum teachers. Supervisory personnel in the FUSD Bilingual Department were asked to identify teachers who were interested in issues concerning diverse students and would teach in an after-school enhancement program.

Each of the two classes were staffed with a certified teacher and a bilingual aide. The teacher of each class possessed a Cross Cultural Language and Academic Development Certificate (CLAD) and had knowledge about constructivist, instructional discourse, active teaching pedagogy, and second language acquisition strategies. A bilingual aide was also assigned to each class. The aide could speak and write in both Spanish and English. The aide was paid from a separate fund provided by FUSD. Likewise, the teachers and aides taught in both of the classrooms at various times throughout the program.

Process

This study employed an action research framework that utilized a quasi-experimental one-group pretest/posttest design (Stanley and Campbell, 1963) with some modifications. Clearly, the one-group pretest/posttest design had some serious limitations in regards to validity and reliability. This was addressed by using an artificial control group. The artificial control group was created by utilizing the "norm" group that the CTBS and IPT used to determine yearly growth on their assessment scales. Therefore, the one group pretest/posttest design , with an artificial control group, became the model for this study. This modified design was very similar in purpose to a two group pretest/posttest design which is considered to have very strong validity and reliability (Stanley and Campbell, 1963). FUSD agreed and authorized its use. The design was implemented as follows: T1 x T2, (T1 = pretest, x = intervention, and T2 = posttest).

The test was administrated and data collected by FUSD assessment personnel. These individuals had no invested interest in how the research came out, and were unaware about which students were or were not a part of the study. The CTBS and IPT were conducted according to the schedule recommended by the examiners manual (CTB/McGraw-Hill, 1988, p. 3), and the IPT technical manual (Ballard and Tighe, 1982, p. 2), and followed by FUSD.

Intervention

The two classrooms for the after-school program were located in separate areas on the campus of Juniper Elementary School, Fontana, California. One classroom was located in a portable building adjacent to the playground. The second classroom was a part of the main campus wing. Each classroom held four one-hour sessions each week, Monday through Thursday. The total duration of the after-school program was six months. The program started with the pretest administered in June during the first week of the new school year (year round track) and ended with the posttest which was conducted the first week of December (before winter break).

Each classroom had a large carpeted area used for whole group activities. Two portable swimming pools (six feet by fifteen feet) were placed in this area and filled with sand. Artifacts, fossils, and bones were buried in the sand. Smaller areas in both classrooms were arranged for small group activities. These activities centered on tasks such as measuring, weighing, diagramming, writing, reading, and using the computers. Classroom arrangements and activities in each of the two settings were as similar as possible. Each session began with a large group activity involving attendance, reading or journal writing, and a demonstration by the teacher. The period varied between fifteen and twenty-five minutes. The demonstration or information period set the stage for the remainder of the hour. For the last thirty to forty minutes, the students worked in small groups or pairs to do the day's activities.

The contextualized environment of the classroom was designed to increase and accelerate English language acquisition. The curriculum was based on current research in constructivists, instructional discourse, and active teaching strategies. The ultimate purpose of the curriculum and the classroom environment was to guide the fifth grade LEP Hispanic student's progression toward grade level proficiency.

Each pair of students was assigned a task to perform within the context of the dinosaur dig. Critical thinking and independent judgment skills were developed through the integration of various themes. The students worked in pairs or small groups to solve problems in a variety of ways that encouraged the development of academic English language skills in both social and recreational settings.

Instruction during the after-school program focused on the students' development rather than the mastery of specific English or grammar skills. An axiom made by this researcher was that by not focusing on the area of academic weakness (i.e., sentence structure, tenses, writing in complete sentences, etc.), but on the students' interest, the English skill would be gained indirectly.

In each classroom there were various levels of language development and academic proficiency. Student needs were met through creative multi-level teaching techniques. All language instruction was based on real needs, purposes, and functions across many curricular levels.

Language skills were charted for progress. This type of authentic assessment showed each student's progression as their level of proficiency increased. The language skills included: common objects, (objects buried in the pools), bone or body parts, names of various objects, colors, and locations. For students who mastered the skills listed above, more in-depth content was directed to them. These other language skills included letter combinations, English phonic sounds, answers from readings, and correct use of punctuation and sentence structure.

Numerical skills were also charted for progression. This type of authentic assessment showed each student's progress as time in the program increased. By putting the students in a contextualized environment and systematically monitoring their progress, the students were given opportunities to explore and manipulate objects according to size, greater than/less than, comparing, contrasting, and classifying.

Analytical Process

This action research was constructed as a one-group pretest/posttest design with an artificial control group. The study utilized the scores of the pre/posttest of the CTBS and IPT to measure academic advancement and oral English proficiency. The data obtained from the test was processed through the SPSS Release 4.1 program for IBM computers. A one-tailed t-test was conducted on the results. The .05 levels of significance were chosen as the level of probability to accept the four hypotheses. Furthermore:

> ...statistical conventions generally demand that there be less than 1 chance in 20 (5%) that a difference between two means could have happened by chance. In some instances, researchers are not satisfied unless there is less than 1 chance in 100 (1%) that random variation could account for findings. The more stringent we are in setting criteria for rejecting the null hypothesis, the more we reduce the possibility of error (Slavin, 1992, p. 8).

In addition, the analyses of the pre/post test were evaluated to appraise the growth of the students during the intervention with the national norm group. The final use of the scores equated the students' previous results (of the CTBS) over the last four years with their testing level. The comparison evaluated the scores to assess significant change regarding present and previous years' GEs and NCEs.

Statistical Review

To ascertain increased academic achievement, the pre/post test results of the IPT and CTBS tests were assessed. The difference between the pre/post test scores were

calculated to verify the four hypotheses. To accept the hypotheses the test results must be significant at the .05 levels.

Hypothesis One: There would be a significant increase in English oral language proficiency after the six-month after-school intervention ($p < .05$).

The IPT pretest was administered to the 30 LEP Hispanic students during the first week of school in June (Table 1). The mean for the students was 23.4 . The IPT posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 55.1. To be significant at the .05 levels the t-value must exceed 2.042. The t-values was 23.22. The test showed a significant difference between the pre/post scores. Hypothesis One was accepted.

The analysis of data supported Hypothesis One that there would be a significant increase in English oral language proficiency. The class average rose from 23.4 items correct to 55.1 items correct. The overall average gain of each student from the pretest to the posttest was 31.1.

Table 1
t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the IPT Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE IPT	30	23.4	11.71	2.15		
POST IPT	30	55.1	9.58	1.75	*23.22	29

(Difference) Mean	Standard Deviation	Standard Error
31.6667	7.471	1.364

Note. One-tailed test of significance: *p<.05 df = 29
The individual pre/post scores for the IPT ranged from a low of 06 to a high of 75 resulting in an average gain in the final score of 31.6667 with a standard deviation of 7.471.

Hypothesis Two: There would be a significant increase in reading comprehension after the six-month after-school intervention ($p < .05$).

The CTBS/Reading pretest was administered to the 30 LEP Hispanic students during the first week of school in June (Table 2). The mean for the students was 571.0. The CTBS/Reading posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 702.4. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 74.50. The test showed a significant difference between the pre/post scores. Hypothesis Two was accepted.

The analysis of data supported Hypothesis Two that there would be a significant increase in reading comprehension. The class average rose from 571 items correct to 702 items correct. The overall average gain of each student from the pretest to the posttest was 131.4.

Table 2
t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Reading Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE CTBS/RD	30	571.0	34.72	6.34		
POST CTBS/RD	30	702.4	39.59	7.29	*74.50	29

(Difference) Mean	Standard Deviation	Standard Error
131.3667	9.658	1.763

Note. One-tailed test of significance: *$p < .05$ $df = 29$
The individual pre/post scores for the CTBS/Reading ranged from a low of 527 to a high of 802 resulting in an average gain in the final score of 131.3667 with a standard deviation of 9.658.

Hypothesis Three: There would be a significant increase in English language mechanics after the six-month after-school intervention ($p < .05$).

The CTBS/Language pretest was administered to the 30 Hispanic LEP students during the first week of June (Table 3). The mean for the students was 608.7. The CTBS/Language posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 680.8. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 8.58. The test showed a significant difference between the pre/post scores. Hypothesis Three was accepted.

The analysis of data supported Hypothesis Three that there would be a significant increase in English language mechanics. The class average rose from 609 items correct to 681 items correct. The overall average gain of each student from the pretest to the posttest was 72.1.

Table 3
t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Language Test using SPSS

	# of Cases	Means*	S.D.	S. Error	t Value	D.F.
PRE CTBS/LG	30	608.1	44.2	8.11		
POST CTBS/LG	30	680.8	53.91	9.84	*8.58	29

(Difference) Mean	Standard Deviation	Standard Error
72.1333	46.073	8.412

Note. One-tailed test of significance: *$p<.05$ $df = 29$
The individual pre/post scores for the CTBS/Language ranged from a low of 646 to a high of 706 resulting in an average gain in the final score of 72.1333 with a standard deviation of 46.073.

Hypothesis Four: There would be a significant increase in total math scores after the six-month after-school intervention ($p < .05$).

The CTBS/Math pretest was administered to the 30 Hispanic LEP students during the first week of June (Table 4). The mean for the students was 650.5. The CTBS/Math posttest was administered to the same 30 LEP students during the first week in December. The mean of the students on the posttest was 699.4. To be significant at the .05 levels the t-value must exceed 2.042. The t-value was 11.55. The test showed a significant difference between the pre/post scores. Hypothesis Four was accepted.

The analysis of data supported Hypothesis Four that there would be a significant increase in total math scores. The class average rose from 651 items correct to 699 items correct. The overall average gain of each students from the pretest to the posttest was 48.9.

Table 4
t-test of Mean, Standard Deviation, Standard Error, and t Value For Comparisons of Two Means from Matched Groups for the CTBS/Math Test using SPSS Release 4.1 for IBM

	# of Cases	Means	S.D.	S. Error	t Value	D.F.
PRE CTBS/Mth	30	650.5	40.17	7.33		
POST CTBS/Mth	30	699.4	36.85	6.72	*11.55	29

(Difference) Mean	Standard Deviation	Standard Error
48.8667	23.172	4.231

Note. One-tailed test of significance: *$p<.05$ $df = 29$
The individual pre/post scores for the CTBS/Math range from a low of 551 to a high of 732 resulting in an average gain in the final score of 48.8667 with a standard deviation of 23.172.

Pre/Post CTBS Test Score Results

The analysis of the pre/post test scores of the CTBS/IPT were utilized to compare the growth of the students during the intervention period with the national norm (artificial control) group (Table 5). The results show that the national norm group gained an average of eight to twelve points during the six-month period. The students in the after-school program increased their scores between 40 and 130 points during the same time.

Table 5
Comparison of students in experimental program to national norm group (artificial control group)

Experimental Group Pre Test Scores				Months Below National Average	Control Group National Average			
	SC	STAN	NCE	GE		SC	STAN	NCE	GE
RD 571	3		21	2.6	27-35	678-699	5	41-59	4.9-5.5
LG 609	2		14	3.3	12-27	676-691	5	41-59	4.9-5.8
MH 651	3		21	4.0	09-20	676-687	5	41-59	4.9-5.5
IPT 23						65			
Post Test Scores									
RD 702	5		48	5.6	00-10	690-717	5	41-59	5.2-6.4
LG 680	4		40	4.9	02-20	681-699	5	41-59	5.1-6.9
MH 699	6		64	6.5	0	684-695	5	41-59	5.3-6.2
IPT 55						70			

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw-Hill," 1988). "Comprehension Test of Basic Skills Norms Book."

Previous CTBS Test Results

The final use of the scores equated the students' previous results over the last five years. The comparison evaluated the scores to assess significant change regarding previous years' grade level ranking and NCEs.

According to the 1988 CTBS norms book, an average student was defined as one who scored within the fifth stanine with NCEs between 41-59. Twenty percent of the norm group (artificial control group) scored within this range. An NCE of 50 was used to define the average growth of students in grades one to five. This became the standard

employed to measure the growth of the 30 Hispanic LEP fifth grade students to make comparisons of expected yearly growth (Appendices 2-5).

Discussion

The intent of the after-school program was designed to accelerate English language acquisition and academic learning by providing a highly contextualized environment (a dinosaur dig), utilizing constructivist theory along with instructional discourse, and active teaching methods. These strategies were specifically chosen to help facilitate both Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP) development for the LEP Hispanic fifth grade students. By implementing these strategies in a systematic fashion, the presumption was that the students would experience academic success and greater proficiency in English.

The academic achievement of the after-school program was measured by comparing data compiled on the IPT Form A (pretest), and the IPT Form B (Posttest), the CTBS Form U (pretest), and the CTBS Form V (posttest). The intervention has positively affected the 30 Hispanic LEP students. The t-test showed significant differences with all pre/post scores. This allowed the acceptance of the four hypotheses not only at the .05 levels of significance, but also at the .01 levels of significance.

In comparing the LEP students' academic growth from first to the fifth grade, the scores indicate significant gains in all areas tested. The students were 12-14 months below the national average in the first grade. In the second grade, it was 7-15 months. In the third grade, the students were 9-20 months behind the average. In the fourth grade, the students were 23-33 months behind the norm group. At the start of the fifth grade, the students were 27-35 months behind the national average on the CTBS.

The 30 LEP Hispanic fifth grade students who had participated in this research had been struggling academically for several years. After the six-month intervention, results indicate that the students made substantial gains and had attained the fifth stanine for the first time since entering school. All posttest results exhibited increased NCEs to levels

between 40-64. The results of the previous CTBS scores (over the last five years) indicated that the students have had a consistent pattern of little or no academic growth (Appendix 1-5).

Because of this intervention, the students were at or close to all grade level expectations. Subsequently, if several years of student activity can be looked at as a baseline measurement; and an intervention is implemented that compared new activity, behavior, or scores with previous activity, behavior or scores, and there is a change, that change can be viewed as resulting from the activity introduced (Moore, 1993). Slavin's 1992 research indicated similar findings. "If no other major changes occurred during the same year, it is possible to argue that it was the program of improvement that made the difference" (Slavin, 1992, p. 35).

It can be concluded that the students improved significantly within the six-month period. Results in student achievement show substantial gains for all students who participated. Due to the success of the project, a recommendation was made to implement the program for all LEP students at all grade levels at the researcher's site. The bilingual supervisor of FUSD is aware of the study and attempts are being made to implement the intervention into other schools within the district.

Recommendations

Based on the findings of this study:

- It is recommended the school personnel in administrative positions initiate pre-service and in-service workshops, seminars and other types of educational experiences designed to better acquaint teachers, administrators, and other personnel with the educational needs and abilities of LEP students.
- It is recommended the teacher training institutions assume an aggressive leadership role in developing teacher preparation programs which will prepare teachers for multicultural school populations.

- It is recommended that language learning programs such as the one proposed in this research to accelerate English Language acquisition and academic achievement be further developed, implemented, and evaluated through the use of Action Research Projects.
- It is recommended that the implementation of this style of program not be restricted to LEP students, but should be made available as an instructional and enrichment program for all students.
- It is recommended that school personnel conduct a thorough assessment of curriculum structure and classroom materials so as to create culturally relevant programs of study.

Accordingly, language diversity in the classroom has presented many pedagogical questions. A school's first duty must be to help students acquire the language of the society in which they live. School programs that service LEP students need to make sure that students are given the opportunity to develop full proficiency in English. Therefore methods that involve intensive exposure to the sights, sounds, and activities in English are the most powerful.

Furthermore, Hispanics are the fastest growing minority group in the United States. If the children of these immigrants fail to master English, the child will have a proclivity towards continued academic failure (Moore, 1996). Moreover, the review of the professional literature clearly points out the importance of initiating second language learning programs at the elementary level that require the student's active involvement. This notion poses serious implications for teachers who instruct students classified as LEP.

The literature and the findings of this study seem to be in general agreement with respect to the importance of teachers examining their current strategies and practices, and compare these practices with what current researchers have to say about the best or most

successful ways to teach LEP students. After making these comparisons, the teacher can decide which is best to use in his/her specific instructional situation.

There are other implications that can be drawn from this study. First, to begin enabling students to gain communicative competence in instructional or classroom discourse, teachers need to understand their students' backgrounds of points of reference. The findings indicate the importance of understanding the students beyond stereotypes of what they understand, comprehend, or previous knowledge that they bring to class.

Background information gathered from classroom conversations and hands-on activities can be used effectively as a guide in the development of classroom themes and strategies that are student centered and motivate the student to learn more.

An added benefit of the strategies presented in this research is that it encourages the development of rapport and solidarity between the student and the teacher. This allows the instructor to handle students' questions in a positive and constructive way that further enhances the students' academic development.

In conclusion, this research demonstrates effective strategies that can have a positive impact and produce significant academic gains for the LEP Hispanic student. It is the desire of this researcher that this study be used to influence and accelerate the revision of teaching methodologies that influence the way LEP students are taught. The strategies of this study can contribute insight into the L2 learning situations at both the theoretical and practical level and be implemented into a successful ESL model to be duplicated by other schools or districts with similar problems.

Thus, it has been demonstrated that as a result of the implementation of these intervention strategies, student achievement and oral English proficiency was higher than in previous years. This research provided solid evidence to support the need for an effective and well-designed ESL program and offers strategies for specific changes that can take place in the public school curricula to stop the failure rate of Hispanic students before they enter high school.

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Appendix 1

Pre/Post Test Results of the IPT

	Pre IPT	Post IPT	Des.		Pre IPT	Post IPT	Des.
1.	27	59	LEP	16.	16	47	LEP
2.	13	47	LEP	17.	18	51	LEP
3.	11	49	LEP	18.	19	50	LEP
4.	19	54	LEP	19.	30	49	LEP
5.	52	65	FEP	20.	27	55	LEP
6.	30	48	LEP	21.	17	44	LEP
7.	6	47	LEP	22.	17	52	LEP
8.	48	70	FEP	23.	11	40	LEP
9.	30	62	FEP	24.	19	47	LEP
10.	20	61	FEP	25.	20	49	LEP
11.	19	56	LEP	26.	30	66	LEP
12.	11	47	LEP	27.	45	77	LEP
13.	17	55	LEP	28.	10	44	LEP
14.	17	67	LEP	29.	32	60	LEP
15.	27	61	LEP	30.	44	75	FEP

Note. From "Fontana Bilingual Assessment Center," 1995.

Pre IPT Scores Post IPT Scores

LEP = Limited English Proficient

FEP = Fluent English Proficient

Appendix 2

Comparison of Experimental Group and Norm (Artificial Control) Group on the CTBS Reading Scores Grades 1-5

EXPERIMENTAL GROUP				MONTHS BELOW	CONTROL GROUP			
GRADE	RD	STAN	NCE	GE	NATIONAL AVERAGE	NATIONAL AVERAGE		
						RD	STAN	NCE	GE
1st	134	1	2	0	12-14	278-352	5	41-59	1.0-1.2
2nd	324	1	3	0	12-27	480-543	5	41-59	1.8-2.3
3rd	438	2	7.9	1.8	09-20	571-616	5	41-59	2.5-3.4
4th	466	1.5	4.9	1.6	23-33	630-661	5	41-59	3.7-4.5
5th	571	3.1	21	2.6	27-35	678-699	5	41-59	4.9-5.5

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

RD = Reading test results of the CTBS

NCE = National curve equivalent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

Appendix 3

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS Language Scores Grades 1-5

EXPERIMENTAL GROUP					MONTHS BELOW	CONTROL GROUP			
GRADE	LG	STAN	NCE	GE	NATIONAL AVERAGE	NATIONAL AVERAGE			
						LG	STAN	NCE	GE
1st	000	1	1	0	12-14	262-348	5	41-59	1.0-1.2
2nd	345	2	3	1.0	07-15	487-541	5	41-59	1.7-2.3
3rd	420	2	7.9	1.8	09-20	571-608	5	41-59	2.6-3.4
4th	466	1.5	4.9	1.6	23-33	630-661	5	41-59	3.7-4.5
5th	609	3.1	21	2.6	27-35	676-691	5	41-59	4.9-5.8

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

LG = Language test results of the CTBS

NCE = National curve equivalent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

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Appendix 4

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS Math Scores Grades 1-5

EXPERIMENTAL GROUP				MONTHS BELOW	CONTROL GROUP			
GRADE	MH	STAN	NCE	GE	NATIONAL AVERAGE	NATIONAL AVERAGE			
						MH	STAN	NCE	GE
1st	69.8	1	1	0	12-14	255-317	5	41-59	1.0-1.2
2nd	293	2	6	1.0	08-15	477-542	5	41-59	1.8-2.3
3rd	489	2	7.9	1.8	11-18	584-616	5	41-59	2.7-3.2
4th	553	1.5	4.9	1.6	24-33	634-661	5	41-59	3.6-4.3
5th	651	3.1	21	2.6	27-35	676-687	5	41-59	4.9-5.5

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norms sample conducted in fall 1988.

MH = Math results of the CTBS

NCE = National curve equivalent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed GE score.

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Appendix 5

Comparison of Experimental Group and Norm (Artificial Control) Group for the CTBS - Beginning of the 5th Grade to the Middle of the 5th Grade

EXPERIMENTAL GROUP PRE TEST SCORES				MONTHS BELOW NATIONAL AVERAGE	CONTROL GROUP NATIONAL AVERAGE			
	SC	STAN	NCE	GE	SC	STAN	NCE	GE
RD 571	8	21	2.6	27-35	678-699	5	41-59	4.9-5.5
LG 609	2	14	3.3	12-27	676-691	5	41-59	4.9-5.8
MH 651	3	29	4.0	09-20	676-687	5	41-59	4.9-5.5
POST TEST SCORES								
RD 702	5	48	5.6	00-10	690-717	5	41-59	5.2-6.4
LG 680	4	40	4.9	23-33	681-699	5	41-59	5.1-6.9
MH 699	6	64	6.5	0	684-695	5	41-59	5.3-6.2

Note. From "Fontana Bilingual Assessment Center, 1995; CTB/McGraw, 1988."

Experimental group = 30 Hispanic LEP fifth grade students involved in after-school program.

Control group = National norm sample

NCE = National curve equivalent

GE = Grade equivalent

STAN = Stanine score 5 is considered average

Months below national average = Students GE score as compared to normed average GE score

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